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July 30, 2010

Mr. Tom Dunkelman
On-Scene Coordinator
U.S. Environmental Protection Agency - Region 9
75 Hawthorne Street, SFD-8-2
San Francisco, California 94105

Subject: **Responses to EPA Comments dated March 25, 2010 on the Draft Transite Pipe Removal Action Plan (RAP) dated January 8, 2010 and Submittal of the RAP – Revision 1 dated July 30, 2010, Yerington Mine Site; Administrative Order on Consent, EPA Region 9 CERCLA Docket No. 09-2009-0010**

Dear Mr. Dunkelman:

Atlantic Richfield Company (ARC) has prepared the attached revised responses to comments provided by the U.S. Environmental Protection Agency - Region 9 (EPA) on March 22, 2010 for the Draft Transite Pipe Removal Action Plan (RAP), Yerington Mine Site (Site), dated January 8, 2010 and the revised RAP (Revision 1) dated July 30, 2010 pursuant to the Administrative Order on Consent, EPA Region 9 CERCLA Docket No. 09-2009-0010. ARC previously submitted a preliminary version of these responses to EPA on April 23, 2010 after an April 13, 2010 Site visit with EPA to discuss the transite pipe removal action.

EPA requested that ARC prepare a draft supplemental sampling and analysis plan (SAP) to further characterize transite pipe on the Site. ARC submitted a draft SAP to EPA on April 23, 2010. On May 10, 2010, EPA conditionally approved the draft SAP and issued comments on the draft SAP. As referenced in the attached responses to comments and revised RAP, and pursuant to an e-mail dated June 4, 2010 from EPA to ARC, the revised RAP contains both the revised SAP and associated responses to EPA comments on the draft SAP as an appendix (both dated July 30, 2010). The attached revised RAP: 1) integrates the data associated with the initial field characterization program associated with the Transite Pipe Removal Action Work Plan (Work Plan) dated September 11, 2009 and the revised SAP; and 2) addresses all comments associated with this removal action.

In addition to preparing hard copies of the attached responses to EPA comments and revised RAP for the copied recipients indicated below, ARC has uploaded these documents to the Tetra Tech/EPA Anaconda Document Library (SharePoint Partners Website https://partners.ttemi.com/sites/epanevada/default.aspx) in the folder entitled **Transite Pipe RAP - Rev 1 July 2010.**

If you have any questions regarding ARC's attached Responses to EPA Comments, please contact me at (714) 228-6774 or via e-mail at jack.oman@bp.com.

Sincerely,

Jack Oman
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cc: Nadia Hollan, EPA (Hard Copy)
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Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA General Comment #1: The discussion in Section 1.1 Waste Materials and Management is insufficient. There is no discussion of whether any of the pipe or scale constitutes a RCRA hazardous waste. This issue needs to be resolved with an adequate amount of representative sampling to demonstrate that neither the pipe nor scale constitute a RCRA Characteristic waste. EPA recommends that ARC collect a representative number of pipe and scale samples from each identified Homogeneous Area (HA) and make a determination of whether the pipe or scale constitute a RCRA waste.
ARC Response: Prior to the submittal of the draft RAP, ARC's review of applicable, relevant and appropriate requirements (ARARs) established that the transite pipe and scale (where scale is present) are not hazardous wastes, and a hazardous waste determination is not required for the removal action (i.e., the transite pipe is not corrosive, ignitable, reactive, etc.). As stated in the draft RAP, accumulations of loose scale in the pipe will be treated as mixed asbestos-TENORM waste. Federal regulations classify asbestos-containing materials (ACM) as a solid waste, but not a hazardous waste. In Nevada, friable asbestos waste is subject to regulations concerning handling, transportation, record-keeping, notification and disposal per the Nevada Administrative Code (NAC) 444.965 through 444.976. Scale or absorbed materials, if any, in the transite pipe are not hazardous wastes because such materials are explicitly excluded per 40 CFR 261.4(b)(7): "7) Solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock, and overburden from the mining of uranium ore), except as provided by §266.112 of this chapter for facilities that burn or process hazardous waste: (i) For purposes of §261.4(b)(7) beneficiation of ores and minerals is restricted to the following activities; crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and in situ leaching." ARC discussed the applicability of the Bevill Amendment to the transite pipe with EPA and NDEP/NDHHS representatives (Evan Chambers of NDEP on April 8, 2010 and Eric Matus of NDHHS on April 13, 2010) who unequivocally supported ARC's position that the transite pipe and associated asbestos-containing materials are subject to the Bevill Amendment and are not RCRA hazardous wastes. In addition, pursuant to EPA's request in an e-mail dated April 20, 2010 to address step-by-step questions presented on the following EPA Bevill Amendment training website (http://www.epa.gov/oecaerth/assistance/sectors/minerals/processing/bevillquestions.html), ARC provides answers to the questions at the end of these responses. In keeping with the fact that copper ores were "beneficiated" at the Site, and not "processed" (i.e., smelted) on-Site and pursuant to 40 CFR 261.4(b)(7), the following responses to comments and text of the attached Supplemental Scale Sampling and Analysis Plan will use the term "ore beneficiation solutions" to avoid further confusion. This term will also be used in future work plans and data summary reports for the Site that include a discussion of solutions associated with dump, heap and vat leaching, solvent extraction and electrowinning, and milling steps associated with the beneficiation of sulfide ores, and the wastes derived from these solutions. Pursuant to the revised supplemental sampling and analysis plan (SAP), ARC collected a representative number of additional pipe and scale samples from each identified Homogeneous Area (HA) and subjected a sub-set of these samples for leach testing using the meteoric water mobility procedure (MWMP).

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA General Comment #2. The discussion in Section 1.1 Waste Materials and Management is insufficient. The following statement is made on p. 2. "Because the State of Nevada does not have regulations applicable to TENORM, the 15 pCi/g bulk concentration criterion from the adjacent State of Utah was selected …" This statement is not correct. Please see NAC 459.180 through 459.314, Licensing of Radioactive Material. There are two sections here which are particularly relevant. **NAC 459.182 Exemptions for source materials. (**NRS 459.201**)** 1. Any person is exempt from NAC 459.180 to 459.314, inclusive, to the extent that he receives, possesses, uses, owns or transfers source material in any chemical mixture, compound, solution or alloy in which the source material is by weight less than 0.05 percent of the mixture, compound, solution or alloy. **NAC 459.184 Exemption for certain concentrations and quantities of radioactive material other than source material. (**NRS 459.030**,** 459.201**)** 1. Except as otherwise provided in subsection 2, any person is exempt from NAC 459.180 to 459.314, inclusive, to the extent that he receives, possesses, uses, transfers, owns or acquires products or materials containing: (a) Radioactive material in concentrations not in excess of those listed in NAC 459.186; or (b) Naturally occurring radioactive material that contains less than 5 picocuries of radium 226 per gram of material. Please discuss how these NAC sections impact the conclusions of the RAP, both in terms of onsite and offsite disposal of the transite pipe. EPA will provide a copy of a spreadsheet (provided by NV State Radiological Health) that can be used to determine source material concentration. It is EPA's belief that transite pipe or scale exceeding either of the above requirements (source material is by weight more than 0.05 percent of the mixture, compound, solution or alloy; or radium 226 in excess of 5 picocuries per gram) must be disposed of at an appropriate offsite facility.
ARC Response: Per discussions with Eric Matus of the Nevada Department of Health and Human Services (NDHHS) on March 16, 2010, NDHHS's concern from a licensing perspective is not a point exceedance of 5 pCi/g of radium-226, but the average concentrations over transite pipe sections "used for the same purpose". ARC interpreted this to be the average concentration within each homogeneous area (HA) and that, based on the collected data, the average concentrations in all HAs will be below the EPA-proposed ARAR of 5 pCi/g of radium-226. During the Site visit/meeting held on April 13, 2010, ARC agreed with EPA and NDHHS that: 1) a revised decision tree should be included in the revised RAP; 2) radiometric readings will be used to determine the dispositioning of the transite pipe and associated asbestos solid waste materials (i.e., gamma surveys will determine if the pipe is below or above the Site-specific ARAR); 3) average concentrations would be based on long pipe runs used for the same purpose; and 4) transite pipe that exceeds the Site-specific ARAR will be disposed at an appropriate off-Site facility in accordance with the EPA-approved RAP unless EPA agrees to allow temporary on-Site storage of such pipe pending its consolidation with other TENORM wastes destined for off-Site disposal. Based on the SAP results, the on- or off-Site disposal of transite pipe will be based on visual inspection of the pipes for internal scale/sediment. Pipe sections that contain scale/sediment that cannot be cleaned out will be conveyed to an appropriate off-Site waste repository. Radiometric readings will not be used to determine the disposal location for any transite pipe or associated materials.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA General Comment #3. The RAP has not sufficiently identified appropriate offsite disposal facilities which can accept transite pipe or scale which exceeds the above identified regulatory criteria, including applicable RCRA waste criteria. The RAP should identify what levels these facilities can accept, their analytical requirements for acceptance, transport and packaging requirements, transportation and disposal costs, etc. The RAP should also identify any licensing requirements that may be necessary to dispose of material at these facilities, and whether any CERCLA exemptions exist with regard to licensing.
ARC Response: As previously discussed with EPA, ARC's intention has been to combine, if possible, the transport of transite pipe and Process Areas soils to the selected off-Site US Ecology facility in Grand View, Idaho. Transite pipe and associated materials selected for off-site disposal will be segregated and stored pending completion of any radiological removal action(s) in the Process Areas. ARC recognizes that only a limited storage period can be accommodated without licensing the Site for storing TENORM waste, and will discuss this approach further with EPA and NDHHS when both removal action schedules are established.
EPA General Comment #4. The RAP has not sufficiently characterized the radiochemistry of the scale. While numerous samples of pipe and scale were collected, only three samples of scale only were collected, and two of these samples exceed the regulatory criteria cited above (see EPA General Comment #2). EPA believes that the scale samples (as opposed to samples of both scale and pipe combined) will determine the appropriate disposal requirements. In addition, the analytical methodology for the radiochemical analyses is flawed as the samples were not adequately prepared (ground and homogenized) prior to analysis. As described in subsequent comments, a representative number of scale samples should be collected and analyzed using appropriate sample preparation procedures.
ARC Response: As presented in the attached revised RAP, ARC has satisfied this comment with the implementation of the SAP.
EPA General Comment #5. Neither the *Draft Transite Pipe Removal Action Plan* nor the *Transite Pipe Removal Action Work Plan* sufficiently describes an adequate correlation study to determine an appropriate action level in microroentgen per hour (microR/hr) or counts per minute (cpm) that represents an exceedance of regulatory requirements. In general, EPA believes that ARC's reliance upon an attempt to establish a correlation between radiochemistry data and field survey data is flawed and will not ultimately result in a workable procedure to properly assess and dispose of the transite pipe. Instead, EPA believes that ARC needs to focus on a process based on radiochemistry data rather than correlated field survey data. For each Homogeneous Area (HA), ARC should identify (and clearly describe) a representative number of composite samples that would be necessary to characterize the scale in the pipe. After proper radiochemical analyses, the result should then be compared to the appropriate NAC requirements to determine whether the scale and pipe can be disposed of onsite or offsite. In the event that the results are below the NAC requirements, the pipe and any scale could be disposed of at an onsite landfill that is appropriately sited, designed and permitted. In the event that the results are above the NAC requirements, then ARC would need to identify subsequent options. These options could include additional sampling and analyses to identify the contaminated pipe sections, removal of scale and resampling, or simply deciding on offsite disposal of all pipe segments from that HA.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho.
EPA General Comment #6: Neither the *Draft Transite Pipe Removal Action Plan* nor the *Transite Pipe Removal Action Work Plan* sufficiently describes the procedure/technique (detector orientation, static or scanning, count time, minimum detectable concentration (MDC), etc.) used to collect microR/hr and cpm measurements from the transite pipe; see EPA General Comment # 5 above.
ARC Response: The attached revised RAP includes this level of detail.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA General Comment #7: The RAP repeatedly refers to average values for radionuclides yet the sampling was very limited in extent. With such severe limits on sampling; only on easily assessable ends and very diluted with other materials, analysis of the scale was at best qualitative. Subsequently, interpretation requiring quantitative values is inappropriate. An appropriate conclusion for this data could include: *Significant levels of radionuclides are associated with the pipe at multiple locations*. Without more concise sampling to quantify this issue, analysis is not possible from easily accessible open ends of what may be long runs of pipe and discussion of quantity, including average quantity, is not possible with the methods developed for and provided in this report. Additionally, Section 4 is inherently flawed by the quality of the data collected. Unfortunately, this results in all subsequent sections of the work plan now not being supported by the generated data. The study preformed to support this RAP is useful in that the presence of significant levels of radionuclides were found at multiple locations for the transite pipe, but plans for disposal are generally based on insufficient data.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho.
EPA General Comment #8: While survey (gamma, alpha/beta) and radiochemical (Th-232, U-238) results are tabulated and extensively discussed, only brief discussions and summary tables are presented for Ra-226 and Ra-228. Please explain this apparent inconsistent treatment between these isotopes. Furthermore, there should be more analysis of data presented in Appendix E, within the body of the report.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho. Because radiometric readings or radioanalytical results will not be used to determine where transite pipe and associated materials will be placed, the presentation of the initial and supplemental sampling and surveying results has been modified.
EPA General Comment #9: Upon review, it is not stated whether ARC believes their initial sampling approach was sufficient to adequately characterize asbestos or radiochemical concentrations within each HA. Please review characterization data, including data variability, and your characterization results against acceptable industry standards, statistical criteria and/or other Federal or state requirements to conclude that ARC has/has not completely characterized these wastes prior to placement into an onsite landfill. This should included detailed discussion of the "uniquely associated" determinations rendered by ARC for the RCRA waste regulation/exemption of the transite pipe intended for disposal. EPA requests that this discussion be clearly presented in Section 1.0 of the RAP.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho.
EPA Specific Comment #1, Section 1.0, Page 1: Per Section 3.0 (Removal Action Plan) of the August 19, 2009 Removal Action Work Plan, the results of the ACM inspection program and characterization data would result in the preparation of a supplemental RAP, presumably to serve as a supplement to that section of the work plan. It is recommended that the January 8, 2010 RAP be revised to comply with this portion of the work plan.
ARC Response: The attached revised RAP addresses this comment.
EPA Specific Comment #2, Section 1.0, Page 1: The plan states that "The removal action will be performed for transite pipe and associated materials located on the accessible portions of the Site" and then later states "Transite pipe occurs within five of the eight Operable Units". This should clarify that additional transite pipe may occur in less assessable areas or be found as part of a utility system component survey. A reviewer could be misdirected to believe that this plan will result in the removal of all transite materials.
ARC Response: The attached revised RAP clarifies this issue.
EPA Specific Comment #3, Section 1.2, Page 2: This section should also discuss the follow-on work that was completed by ARC during November 24, 2009 and that this work occurred without EPA oversight.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
ARC Response: The attached revised RAP describes all supplemental sampling and analysis.
EPA Specific Comment #4, Section 1.2, Page 3: The last paragraph states "Section 5.0 presents the updated plan for the removal action, in part based on the field…" It is recommended that this discussion be expanded to include other criteria used to develop the updated plan for removal action.
ARC Response: The intent of Section 1.2 was to give the reader an understanding of the basic layout of the document, and the basis for the removal action was presented in Section 5.0. ARC has eliminated this level of detail in the attached revised RAP.
EPA Specific Comment #5, Section 2.0, Page 4: The bulleted summary differs from the work plan, with the HA-4 discussion referencing scattered transite pipe materials (not referenced in the work plan) and the work plan identifying a "few friable" pipe sections within the RCA. For HA-5, the work plan description for this area defines its boundary as also extending between the Process Area and southern Sulfide Tailings Area. Please ensure that the descriptions are consistent between the plans and if differences exist; clearly explain these differences, why they occur and when they were discovered.
ARC Response: The attached revised RAP addresses this comment.
EPA Specific Comment #6, Section 2.1, Pages 5-6: This section is specific to ACM sampling and should be identified accordingly. The statement "Sample locations, type of characterization performed and pipe descriptions is not accurate. Inspection and sampling criteria (Work Plan, Section 2.0) is generally discussed, but should be reiterated in tabular form to display the total linear (or square) footage for each HA that was sampled and the corresponding number of samples planned and obtained for each. In this manner, compliance with work plan requirements would be more clearly illustrated.
ARC Response: The attached revised RAP demonstrates that removal objectives and requirements will be achieved, pursuant to this comment and the additional scale sampling described in the revised SAP.
EPA Specific Comment #7, Table 2-1: Table 2-1 is incorrectly labeled as it also contains a summary of coated metal and concrete pipe samples. It is recommended that the title be revised to reflect all sampled materials, or that the sampled coated metal and concrete pipe materials be included in a separate table. Table 2-1 also lacks considerable information relevant to the characterization, including; NR – not defined, approximate volume of ACM characterized/sample (per AEHRA requirements and to corroborate Section 2.3 statements), incomplete or missing comment discussions. Given that ARC is proposing to land dispose at least a portion of these materials in an onsite landfill, EPA expects a complete and detailed discussion of all sample locations.
ARC Response: The attached revised RAP addresses these elements.
EPA Specific Comment #8, Section 2.4, Page 12: ARC states that the radiometric survey would "…fulfill the function described in Section 2.2.4 of the MARSAME Manual; EPA, 2009". It is recommended that ARC determine whether or not the survey fulfilled these requirements and specifically state that the work did or did not fulfill the function described in Section 2.2.4 of the MARSAME Manual.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho. This comment is no longer applicable.
EPA Specific Comment #9, Section 2.4, Page 12: It is stated that "The majority of the measurements were taken at intervals….and holes or breaks in intact pipe" and "Where pipe segments had terminated….interior of the pipe, a gamma…" Please expand this discussion to indicate whether or not debris/scale was observed at the sampled locations and define what "the majority" relates to, or if this information is described elsewhere in the RAP, provide a reference to that location in this portion of the RAP.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
ARC Response: Field notes in Appendix B of the attached revised RAP document where scaling was observed. Survey measurements were made at 101 locations, and samples were collected at 23 of these locations. Thus, "the majority," (the other 78 measurements) were collected at the locations as described in this section. However, as noted above, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho. Therefore, the issue addressed by this comment is no longer applicable to the removal action.
EPA Specific Comment #10, Section 2.4, Page 12: Interior radiation measurements will be influenced by the shielding affects of the transite pipe wall, thus the determination of background values from uncontaminated pipes should be determined for each instrument.
ARC Response: As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho, and this comment is no longer applicable.
EPA Specific Comment #11, Section 2.4, Page 13: ARC states "…ACM samples and were collected in a manner suitable for determining radiochemical concentrations…" EPA requests that ARC describe the "manner" suitable for determining radiochemical concentrations because this discussion is unclear. Further, please also discuss where pipe interiors were scoped with the pancake monitor. Also, this sentence concludes with "…scale and deposits, where applicable, on the inner pipe wall)" Would it be more appropriate to state "…scale and deposits, if present, on the inner pipe wall)"? Please also indicate where these scale deposits were located.
ARC Response: The attached revised SAP addresses this comment with additional information on locations of scale and radiometric reading methods. Based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho. Therefore, this comment is no longer applicable to the removal action.
EPA Specific Comment #12, Section 2.4, Page 13: A Ludlum Model 44-9 will detect gamma radiation in addition to alpha and beta radiation, thus the report should acknowledge this fact. Measurement of only alpha and beta radiation should be conducted with a Ludlum Model 43-93 not a Model 44-9. The plan states that a Ludlum model 44-9 probe will be used to perform alpha and beta surveys. The 44-9 detector is a pancake G-M tube typically used to make beta-gamma contamination measurements. Although the detector will respond to high energy alpha particles, the efficiencies obtained are not good. The mica window of the detector shields out most alpha particles. Suggest dropping the reference to alpha measurements.
ARC Response: The attached revised RAP indicates that a Ludlum Model 44-9 is capable of detecting alpha, beta, and gamma radiation. However, as indicated above, radiometric readings will not be used in the removal action.
EPA Specific Comment #13 Section 2.4, Page 13: The procedure for sample preparation for gamma spectroscopy analysis is unclear. The analytical method of analyzing pieces of pipe instead of grinding and homogenizing an adequate sample mass will result in unknown data quality. Laboratories have the capability to grind and homogenize a wide variety of hazardous samples, thus a transite pipe sample should not prevent proper analytical preparation.
ARC Response: The sample aliquot was selected to be representative of the submitted sample, including the pipe exterior wall, the full pipe wall thickness, and the interior wall with any attached or incorporated scale matrix. As discussed in Section 4.2 of the draft RAP, sample aliquots for gamma spectroscopy were selected by breaking up the submitted sample into smaller pieces and visually selecting representative pieces for counting. This method used approximately 40 percent of the sample (200 grams of an approximate 500-gram submitted sample), and is considered by the analytical laboratory and ARC to represent the samples collected in the field. As described in the attached revised RAP, samples collected pursuant to the SAP were homogenized by Eberline labs. Based on the SAP results, on- or off-Site disposal will be based on a visual inspection of the pipes for internal scale/sediment and radiometric readings will not be used during the removal action.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA Specific Comment #14, Section 2.4, Page 13: Radiochemical samples were not exclusive to scale but included the entire thickness of the pipe. This sample was essentially diluted with asbestos. The pipe scale is not permanently attached to the pipe and the pipe was observed in many cases to be degraded. The pipe scale should be sampled by analyzing multiple samples of visible scale to determine average concentrations. This will also reduce risk to laboratory personnel from asbestos.
ARC Response: This comment is no longer relevant given that the attached revised RAP indicates that the decision for on- or off-Site disposal will be based on visual inspection of the pipes for internal scale/sediment.
EPA Specific Comment #15, Section 2.4, Page 13: The data packages from Test America were not validated. In addition, the laboratory did not include a discussion of the affects on data quality due to the unconventional sample preparation and analysis geometry for gamma spectroscopy, but should have. Please correct this deficiency.
ARC Response: The attached revised RAP includes available validation reports by ARC's third-party laboratory quality assurance reviewer, Environmental Standards, Inc. for the data collected pursuant to the Transite Pipe Removal Action Work Plan dated September 11, 2009. Subsequent data resulting from the SAP (e.g., Eberline Labs for radiochemicals and Test America labs for MWMP leachate) are not available as of the date of the submittal date (July 30, 2010) of the attached revised RAP.
EPA Specific Comment #16, Section 2.4, Page 13: A detailed description of how the meters were calibrated to Ra-226 should be provided.
ARC Response: The meters were calibrated by the manufacturer, Ludlum Measurements, Inc. with a Ra-226 source per the manufacturer's specifications. However, radiometric readings are no longer relevant to the removal action.
EPA Specific Comment #17, Section 2.4, Page 14: Please clarify what is meant by "These two samples likely contained some remnant asbestos." The previous sentence, which is referencing "scale" samples from HA-4-01 and HA-4-02 consisting of "flaky friable transite pipe material (i.e., RACM)", suggests that these samples do contain asbestos. Please clarify this discussion.
ARC Response: The scale samples from locations HA-4-01 and HA-4-02 could not be separated, from the transite pipe material, which was weathered and friable, and appeared to have been impregnated with ore beneficiation solutions. These samples differed from the asbestos samples taken at the same location because they included only the interior portion of the pipe that appeared to be impregnated, rather than the entire pipe thickness. This clarification is presented in the attached revised RAP.
EPA Specific Comment #18, Section 2.5, Page 14: For the bulleted discussion, it is requested that the estimated length and square footage of inaccessible pipe for each HA be included.
ARC Response: The attached revised RAP includes this information. (Length estimates only).
EPA Specific Comment #19, Section 2.5, Page 14: The plan should address how an assessment of inaccessible pipe will be conducted. Because it appears that sampling was limited to easily accessible areas, this limits how representative the results are; conditions of scale can very away from the joints between the pipes or weak spots where breaks occurred. In addition, pipe ends are subject to weathering. The sample limitation may be defendable, but its effect on the data should be discussed.
ARC Response: Inaccessible pipe from a sampling standpoint will likely also be inaccessible during the removal action. The approach to accessing inaccessible pipe will be assessed by ARC's selected contractor. Given that all pipe will be managed based on a visual inspection of internal scale/sediment, ARC believes that the data element of this comment is addressed.
EPA Specific Comment #20, Section 3.1, Page 15: Please specify how Data Verification was completed.
ARC Response: The attached revised RAP addresses this comment.

Responses to EPA Comments on the Draft Transite Pipe Removal Action Plan dated January 8, 2010
EPA Specific Comment #21, Section 3.2, Page 18: It is recommended that the discussion pertaining to the asphaltic-coated metal pipe CAT II non-friable ACM designation be clarified as related to the metal pipe or the asphaltic coating.
ARC Response: The attached revised RAP addresses this comment.
EPA Specific Comment #22, Section 3.2, Page 19: It is recommended that the bulleted discussion be revised to state that these items "will" versus "should" be completed, given, sprayed or retained.
ARC Response: The revised RAP includes this recommendation.
EPA Specific Comment #23, Section 4.0, Page 20: Please specify the length and square-footage for each area characterized.
ARC Response: The revised RAP includes this information.
EPA Specific Comment #24, Section 4.1: A table summarizing individual microR/hr, cpm, and pCi/g results for each measured location should be included.
ARC Response: These data are provided in Appendix E of the attached revised RAP.
EPA Specific Comment #25, Section 4.1, Page 20: Background data collected on-site is not an appropriate location due to the many potential influences on background; i.e., presence of nearby radioactive materials, presence of various construction materials, etc. Background values should be obtained from a site designated background area (ARC has previously identified a representative background area) and statistically based background values should be reported and used for comparison to on-site measurements.
ARC Response: The purpose of collecting "background" measurements was to determine the potential impact of locally-elevated radiation levels in the general area on the measurements obtained for the pipe itself. As described in the attached revised RAP, based on SAP results, transite pipe and associated materials will be visually inspected to determine sections that need to go to the US Ecology facility in Grand View, Idaho. As such, this comment is no longer applicable.
EPA Specific Comment #26, Section 4.1, Page 21: Please describe the exception noted due to pipe scale or sediment. This cannot be the only location that exhibited pipe scale or sediment, but appears to be the only location where interior/exterior radiological readings were "inconsistent". What location-specific factors contributed to this inconsistency based on field observations and characterization data?
ARC Response: The scale at this location was noticeably thicker than scale observed at other locations.
EPA Specific Comment #27, Table 4-6, Page 25: Please explain the significant difference between sample HA-4-02 and its field duplicate. Also, please explain what conditions contributed to the elevated readings at location HA-1-07?
ARC Response: The field duplicate is not a true duplicate due to the practical difficulties of sampling asbestos-containing materials. It would be more accurately described as a co-located sample. Visual observations in the field did not provide any explanation for the difference between the two co-located samples, but may be attributable to the relative amount of scale with variable TENORM characteristics in each sample or that the scale material was deposited over time and is not necessarily homogeneous from location to location.. The reason for the elevated readings at location HA-1-07 is also unknown - this pipe is stacked up and the original location and use of the pipe is not known.
EPA Specific Comment #28, Table 4-10, Page 27: Scale sample results for both HA-1-07 and HA-4-02 exceed the previous ARAR of 15 pCi/g for Ra-226, with HA-1-07 scale sample results almost twice the level that were observed in the pipe sample. EPA requests that ARC explain (1) the factors that would contribute to this significant variability between the pipe and scale sample results at location HA-1-07, and (2) discuss these contributing factors relative to observations made at other sample locations.
ARC Response: Radiochemical concentrations in a sample deliberately collected to maximize the portion of the sample composed of scale will always exceed the concentration in a sample intended to determine bulk radiochemical concentration in an entire waste stream, primarily because the scale is where the majority of the radiochemicals are located. Given that transite pipe and associated materials will be visually inspected to

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determine sections that need to go to the US Ecology facility in Grand View, Idaho, this comment no longer applies to the removal action.
EPA Specific Comment #29, Section 4.2, Page 27: ARC states "…scale samples from HA-1-07 and HA-4-02 (FD) exceed the previous Site-specific ARAR of 15 pCi/g for Ra-226." Table 4-10 suggests that sample HA-4-02 (not HA-4-02 [FD]) exceeds the ARAR. Please confirm and correct this statement, or revise Tables 4-10 and 4-11 to be consistent with the text discussion.
ARC Response: The table is correct (no field duplicate scale sample was collected at HA-4-02).
EPA Specific Comment #30, Section 4.4, Page 30: The Plan discusses a 30 µR/hr action level or a net dose rate of 6 µR/hr above background. Is this a contact measurement?
ARC Response: As previously indicated, neither radiometric readings nor radioanalytical results will be used to make decisions regarding the on- or off-Site disposal of transite pipe and associated materials. Therefore, the presentation of the results of the initial and supplemental SAP has been modified in the attached revised RAP to support this approach.
EPA Specific Comment #31, Section 4.4, Page 32: The Plan discusses using 3,000 counts per minute as a screening value for interior pipe wall surfaces. The Plan states that "This approach is validated by the fact that sample location HA-4-02, with a count rate of 6,500 cpm, has a Ra-226 concentration of 6.4 pCi/g (measured in the field duplicate sample)". However, sample HA-1-07 has a count rate of 7,000 cpm and a corresponding Ra-226 concentration of 95.4 pCi/g on the transite pipe sample and 155 pCi/g on the scale sample. There is little correlation between dose rate measurements and surface scan measurements. There is insufficient data to validate the 3,000 cpm screening level.
ARC Response: See response to specific comment #30.
EPA Specific Comment #32, Section 4.4, Page 32: The statement "given that the majority of the alpha/beta survey results were less than half of the site specific ARARs, the proposed 3000 cpm actual represents a conservative action level to designate transite pipe sections as suitable for disposable in the on-site landfill cell or not", is misleading as to the quality of the data generated and a misinterpretation of the data. In addition to being poor grammar, this is making an assumption of scale at the end of the pipe exposed to weather and dilution by a well known windblown dust issue. All of the samples were also diluted by asbestos as indicated in Comment 4. Subsequently, this and following statements in the work plan regarding the quality of the data should be disregarded. The data collected for the study simply does not support this depth of interpretation.
ARC Response: See response to specific comment #30.
EPA Specific Comment #33, Section 4.4, Page 32: Given the previous comments, the correlation of microR/hr and cpm measurements to 15 pCi/g Ra-226 is unclear. Thus, 6 microR/hr or 3,000 cpm above background may or may not represent conservative values equivalent to less than 15 pCi/g Ra-226.
ARC Response: See response to specific comment #30.
EPA Specific Comment #34, Section 4.4, Page 32: Radon-220 and radon 222 are gases and some quantity will continuously migrate from the scale matrix, thus preventing secular equilibrium with radium-228/thorium-232 and radium-226/uranium-238, respectively. Therefore, Figures 4-6a, 4-6b, 4-7a, and 4-7b misrepresent this fact. Calculation of an estimated equilibrium may be possible with correct statistical analysis of the data.
ARC Response: Radon-220 and radon-222 are decay products of radium-228 and radium-226, respectively, and do not occur in the decay chain between uranium-238 and radium-226 or between thorium-232 and radium-228 (i.e., these portions of the respective decay chains are above the radium isotopes). Therefore, the magnitude of radon emanation from the scale would have absolutely zero impact on the equilibrium relationship between uranium-238 and radium-226, or the relationship between thorium-232 and radium-228. Figures 4-6a through 4-7b in the draft RAP depicted these equilibrium relationships.

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EPA Specific Comment #35, Section 4.4, Page 32: HA-4-01 in Figure 4-1a indicates a microR/hr value above 100 similar to HA-4-02-FD. However, the cpm values for HA-4-01 indicated in Figure 4-3a is substantially lower than the value for HA-4-02-FD. Likewise the radiochemical results are substantially lower for HA-4-01 than the values for HA-4-02-FD. These discrepancies should be fully addressed.
ARC Response: The discrepancy is due to the elevated and highly variable background present within HA-4. Based on the SAP results and the EPA-approved method of visual inspection for internal scale/sediment, the presentation of the results of the initial and supplemental sampling ad surveying has been modified in the attached revised RAP.
EPA Specific Comment #36, Section 4.4, Page 32: Also, related to the 3,000 cpm screening value, using the value of 2.22 disintegrations per minute per pCi and assuming a 15% efficiency for a Ludlum 44-9 G-M detector, 3000 cpm equates to 9000 pCi per 15.5 cm^2 (the approximate active probe surface area).
ARC Response: Response of a Ludlum Model 44-9 G-M detector to radiation inside transite pipe is influenced by factors including those described at: http://www.ludlums.com/index.php?page=shop.product_details&flypage=flypage_ludlum.tpl&product_id=185&category_id=62&activetab=specs&option=com_virtuemart&Itemid=15). However, based on the SAP results and the EPA-approved method of visual inspection for internal scale/sediment, these factors are not significant for the removal action.
EPA Specific Comment #37, Section 5.1, Page 35: The plan states that "ARC plans to manage all loose scale and sediment derived from this limited decontamination activity as mixed asbestos-TENORM waste after completion of the removal action activities described below." The two questions that this statement creates are 1) the data appears to indicate the potential for all the material to be "mixed asbestos-TENORM waste" so why only this fraction to be at least named accordingly and 2) what is the plan for disposal of asbestos-TENORM waste?
ARC Response: This comment is no longer relevant for the removal action, given that visual inspections for internal scale/sediment in transite pipe and associated materials will be used to decide if the materials are to be shipped to the off-Site facility.
EPA Specific Comment #38, Section 5.1, Page 36: ARC needs to be more specific as to whether they are pursuing a Class III landfill or a Class III landfill waiver. Again, given the CERCLA exemption, only the substantive requirements must be met. Furthermore, the exceptions for the landfill, less than 100 feet to groundwater and vegetative cover, should be addressed in greater detail.
ARC Response: ARC believes that the attached revised RAP contains the information necessary for a Class III landfill waiver to be obtained from NDEP, including the required information associated with the depth to groundwater and the intent to not re-vegetate the cover.
EPA Specific Comment #39, Section 5.1, Page 37: This section states "Pursuant to the EPA-approved Transite Pipe Removal Action Work Plan – Revision 1, the landfill cell will be…" ARC, EPA and NDEP were to meet once the transite characterization program had concluded to summarize the available asbestos and radiological characterization data required to support a decision regarding what type of waste can be placed in an unlined on-Site landfill cell and the appropriate disposal method for mixed wastes. This discussion has not occurred and conclusions about what may/may not be required are not approved by EPA. This statement is misleading and EPA requests that it be qualified or removed until these discussions have occurred and a path forward is agreed upon. Also EPA would suggest minimizing or eliminating the amount of VLT that is used in the floor and ramps of the landfill. This could be done by utilizing track-mounted vehicles to the maximum extent possible, rather than rubber tired equipment. In the past removal actions, EPA did not have a problem running rubber tired haul trucks over the sulfide tailings. In the event that this was a problem, local sources of gravel are available, to improve traction.

ARC Response: Given the SAP results and the visual inspection approach to designating which materials are suitable for on-Site disposal, the first part of this comment is no longer relevant. The use of VLT materials will: 1) allow the contractor (i.e., landfill operator) optimal flexibility without the potential for bottlenecks caused by slower tracked equipment; 2) mitigate the risk of rubber-tired equipment becoming stuck during precipitation events by creating a reliable and stable base; and 3) require less construction water and energy which would be required to compact the fine-grained sulfide tailings. ARC has previously quantified the mechanical properties of the VLT materials in support of the evaporation pond removal action, and EPA has directed ARC to use the VLT to create interim covers over the Thumb Pond and Sub-Area A (the latter located within the sulfide tailings nearby the proposed landfill cell locations. In addition, the landfill cell cap will require a minimal 6-inch veneer of VLT materials to prevent dust generation.

EPA Specific Comment #40, Section 5.4, P. 43: Discuss how transite pipe that is left in place will be identified and recorded, so that future workers are aware of its presence.

ARC Response: Following the removal action, ARC will prepare a technical memorandum to be attached to the removal action report that identifies, describes and reiterates the institutional controls to be used, as presented in Section 5.4 of the draft RAP.

EPA Specific Comment #41, Section 5.5, P. 44: Describe what long-term maintenance may be necessary for the landfill. Given that the pipes are being buried uncrushed, there is potential for material to fill the void space over time, and thereby lead to settling.

ARC Response: Potential long-term settlement issues associated with the landfill cell design will be mitigated by the following design elements:

1) Fill requirements during construction require relatively light ground pressure (LGP) tracked equipment to place the initial cover materials until a sufficient cover thickness (i.e., at least one foot) is placed over the pipe, which will disperse rubber-tired ground pressure below potential crushing limits of the pipe;
2) The ends of the pipe are to be compacted with on-site fill in between pipe lengths then covered with double-sided textured HDPE to assist with cover support at the pipe ends;

The placement and compaction in lifts of the VLT materials, as designed on the basis of known mechanical properties, will prevent settlement and support the landfill cell cap design, ARC does not anticipate any significant long-term settlement issues to occur. However, in the event of surface settlement that may be detrimental to the function of the landfill, VLT tailings materials are readily available to mitigate any observed settlement.

EPA Specific Comment #42, Figure 4-8: Based on comments provided, the Pipe Disposal Decision Tree will need substantial revision.

ARC Response: Based on the SAP results and the visual inspection to determine the presence or absence of scale/sediment within the interior of transite pipe sections, the decision tree is no longer relevant to the removal action.

Pursuant to EPA's e-mail dated April 20, 2010, ARC has developed answers to step-by-step questions from EPA's online Bevill Amendment training materials web site (http://www.epa.gov/oecaerth/assistance/sectors/minerals/processing/bevillquestions.html):

"What are the Basic Steps in Making Bevill Determinations?

1. **"Determine whether the material is considered a solid waste under RCRA."** The transite (concrete-asbestos) pipe and any associated scale or residue are *solid wastes* per 40 CFR 261.2(a) because they are and will be *discarded materials* that will be *abandoned by being disposed of* and are presently accumulated before being disposed of per 40 CFR 261.2(b), and these discarded materials are not otherwise excluded or exempt from being classified as a solid waste.

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2. **Determine whether the facility is using a primary ore or mineral to produce a final or intermediate product and also whether less than 50 percent of the feedstocks on an annual basis are from secondary sources."** The Anaconda Company (Anaconda) mined *primary copper ores* from the open pit at the Yerington Site and utilized them to produce the product (average 83%) copper cement. Feedstocks were primary rather than secondary sources, and therefore *less than 50 percent*. **3.** **"Establish whether the material and the operation that generates it are uniquely associated with mineral production."** The Anaconda feedstock, product, operations, and facilities and residues such as the discarded transite pipe/residues were all *uniquely associated* with mineral production. Operations at the site included mining and the following ore *beneficiation* activities listed in 40 CFR 261.4(b) (7): crushing, grinding, sizing, washing, vat leaching, precipitation ((also called cementation), gravity concentration, flotation, and drying. Subsequent owners/operators at the site conducted heap leaching and electrowinning activities. These have all been described in detail in previous reports and work plans submitted to, and approved by, EPA. The transite pipe was utilized by Anaconda to convey acidic ore beneficiation solutions used to *leach* copper from oxide ores mined at the Site, and to convey copper-rich (i.e., pregnant) solutions *to ore beneficiation facilities*. **4.** **"Determine where in the sequence of operations beneficiation ends and mineral processing begins."** Mineral processing was not conducted by Anaconda at the Site. Processing occurred at an off-Site smelter. **5.** **"If the material is a mineral processing waste, determine whether it is one of the 20 special wastes from mineral processing."** Anaconda did not generate mineral processing waste at the Site. *The transite pipe is not a mineral processing waste.* **"This analytical sequence will result in one of three outcomes:** **(i) the material is not a solid waste and therefore not subject to RCRA;** **(ii) the material is a solid waste but is exempt from RCRA Subtitle C because of the Mining Waste Exclusion; or** **(iii) the material is a solid waste that is not exempt from RCRA Subtitle C and is subject to regulation as a hazardous waste if it is a listed or characteristic hazardous waste."** *The responses to the questions above establish that the transite pipe with any associated scale and/or residue is a solid waste associated with ore beneficiation, but is exempt from RCRA Subtitle C per 40 CFR 261.4(b)(7).*